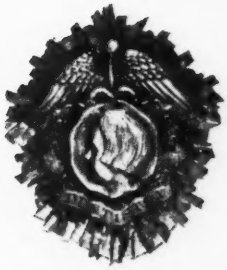
Journal of Dentistry for Children



FIRST QUARTER 1946

Journal of Dentistry for Children

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Vol. XIII — FIRST QUARTER — 1946

CONTENTS

President's Message 1

Interception of Malocclusion 2
Stewart A. MacGregor, D.D.S.

Book Review 12
Mary Edmund, A.B.

Editorial 14

Around the Country 16
Conducted by Stan Brown

Secretary's Message 19

The Child and the Dentist 20
Joseph T. Hartsook, A.B., D.D.S.

Announcement—Sixth Annual Children's Dental Health Day 22

Zinc Phospate Cement 24
Pratt Ringland, A.B., M.P.H., D.D.S.

Ethyl Chloride Anesthesia 27
R. M. Erwin, Jr., D.M.D.

THE PRESIDENT'S MESSAGE

In 1937, the College Curriculum Survey Committee of the American Society of Dentistry for Children made a survey of the State Boards of Dental Examiners to determine how many boards were examining their candidates in dentistry for children. The committee's report, published in the October 1937 issue of the Review of Dentistry for Children, showed that of the forty-four boards who answered the questionnaire, twenty-five were asking questions in pedodontics. Most of the examining boards (34) were of the opinion that the questions should not be asked as a separate subject, but should either be included as a part of operative dentistry, as a part of preventive dentistry, or scattered through the various subjects generally asked in state board examinations.

When the above survey was made, the curricula of all of the dental colleges did not include a course in pedodontics. Now that the Council on Dental Education includes dentistry for children in the list of subjects which must be taught in all dental schools, it would seem that the State Boards of Dental Examiners should keep pace with dental education and examine candidates in this subject. With the emphasis which is now being placed on dental health care for children, pedodontics should merit a place in the examining boards "starting lineup" and it should no longer be a "fill in" for other subjects.

To study this matter and present the views of the American Society of Dentistry for Children to the State and National Boards of Dental Examiners, Dr. Henry M. Wilbur, School of Dentistry, University of Louisville, has been appointed chairman of the State and National Board of Dental Examiners Committee. The other members of the committee will be announced later. The duties of this committee will be:

1. To encourage all Dental Examining Boards to examine in pedodontics.
2. To encourage all Dental Examining Boards to include the questions under the heading of Pedodontics or Dentistry for Children.
3. To compile and distribute to the Dental Examining Boards a list of questions (objective and essay type) in pedodontics with the answers and a scientific and accurate bibliography to support the answers.

RALPH L. IRELAND

Interception of Malocclusion*

Stewart A. MacGregor, D.D.S., Toronto, Ontario

Editor's Note:

Doctor MacGregor, a newcomer to our Journal, is a graduate of the University of Toronto, 1931. Past President of the North Toronto Dental Association and of the Toronto Academy of Dentistry, Sandy is an ardent, enthusiastic worker for dentistry, especially dentistry for children. At present Chairman of the Ontario Public Dental Health Committee and Director of the Dental Education at Forest Hill Village Schools he nevertheless finds time to attend a large practice, visit the U.S.A. for two or three large dental meetings each year and write articles for dental journals in his spare time! If you meet him in Chicago this February, he'll be pleased to talk pedodontics with you — over a Scotch and soda!

A.E.S.

The early pioneers in dentistry are to be congratulated on the time and efforts spent on the many improvements brought forward for the betterment of restorative dentistry. Restorative dentistry has served humanity well both from the standpoint of relief of pain and from the embarrassment of going without teeth.

However, when one is reminded of statistics that show that dental disease is occurring five times faster than it can be taken care of, it seems reasonable to conclude that the time has come when we should turn our attention at least in part from improvement of technique to the study of cause and control.

Too many of us in the past, when examining the mouth of a child, have been too interested in the charting of cavities to give any thought to those factors which have to do with influencing normal growth and development.

*From Jour. C.D.A., July, 1945

When one studies the statistics on the early loss of deciduous teeth and the influence of this loss on the growth of the jaws and alignment of teeth, one can readily see why peridontal disease is so rampant, yes, and artificial teeth so numerous.

Prevention

It should be the aim and desire of every practising dentist to prevent deformity and create conditions in the mouth favorable to normal growth and development. Many of us have taken an apathetic attitude towards this phase of dentistry admitting no responsibility on our own part but shifting the entire problem to the shoulders of the orthodontist. This to my mind is a great tragedy for in the vast majority of cases the orthodontist does not see the child until the damage is done and an extensive treatment is necessary. It seems to me that the wisest way to cope with such a situation would be to teach such preventive measures as space maintenance, etc., in the operative department of our dental schools. In this way the student would be impressed with his responsibility in this phase of our work.

A study of Dr. Willett's[1] survey of 1,000 children from 17 months to 10 years can hardly help but convince us that the intercepting of malocclusion is a phase of our work in which the general practitioner can play an even more effective role than that of the orthodontist. Dr. Willet's report is as follows:

60% had caries of deciduous teeth and defective fillings.

29% had premature loss of deciduous teeth (total No. of deciduous teeth lost 893.)

8% had caries, defective fillings, and premature loss of deciduous teeth as the direct cause of malocclusion.

52½% had caries, defective fillings, and premature loss of deciduous teeth as the contributing cause of malocclusion.

61% showed evident need of pre-school dental attention.

Fig. 1

In the light of this report it should seem quite clear to us all that early diagnosis of dental caries in the pre-school child together with proper treatment thereof is the first step in the preservation of normal occlusion. Early diagnosis of dental caries can best be done through the medium of bite-wing x-ray. Fig. 1 shows extensive caries disclosed in a child of 3½ yrs., of age.

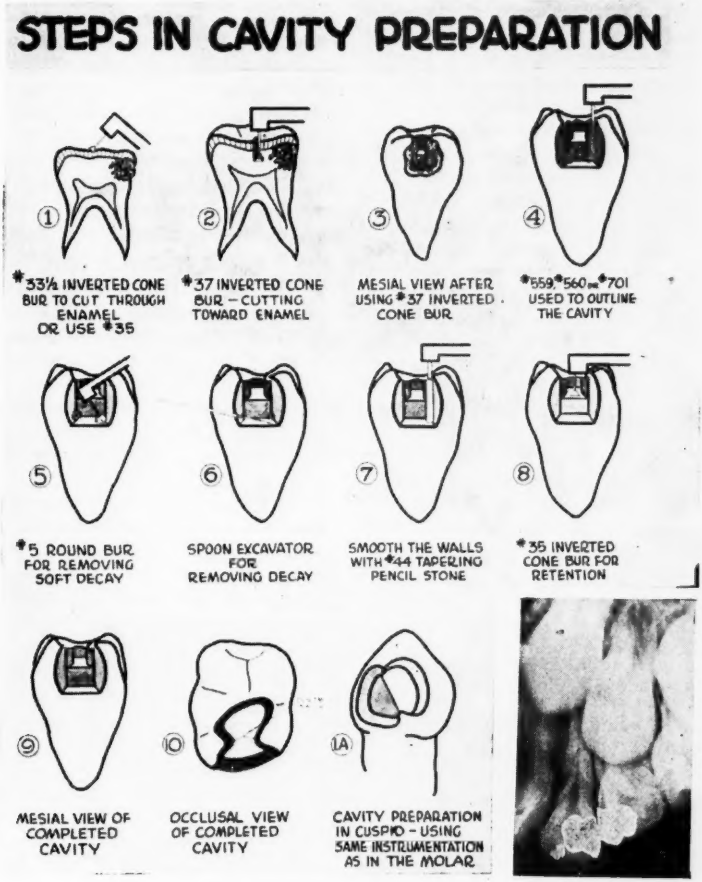
STEPS IN CAVITY PREPARATION
①
*33½ INVERTED CONE BUR TO CUT THROUGH ENAMEL OR USE *35
②
*37 INVERTED CONE BUR – CUTTING TOWARD ENAMEL
③
MESIAL VIEW AFTER USING *37 INVERTED CONE BUR
④
*559, *560 or *701 USED TO OUTLINE THE CAVITY
⑤
*5 ROUND BUR FOR REMOVING SOFT DECAY
⑥
SPOON EXCAVATOR FOR REMOVING DECAY
⑦
SMOOTH THE WALLS WITH *44 TAPERING PENCIL STONE
⑧
*35 INVERTED CONE BUR FOR RETENTION
⑨
MESIAL VIEW OF COMPLETED CAVITY
⑩
OCCLUSAL VIEW OF COMPLETED CAVITY
1A
CAVITY PREPARATION IN CUSPID – USING SAME INSTRUMENTATION AS IN THE MOLAR

Fig. 2

Fig. 3

Dental caries having been revealed as in Fig. 1, our next step towards the goal of normal occlusion should be the carrying out of proper operative procedure on all deciduous teeth with the aim of maintaining them in the mouth until normal time of exfoliation. The operator should design his cavity preparation and choose filling material, keeping in mind that when the work is completed at three or four years of age, the restoration must last for seven or eight years. It has been my custom to use silver amalgam as a restorative material. Wagner stainless steel matrix material is purchased in sheets and the matrix is cut about 2½ to 3 mm. in width and inserted in an ivory matrix retainer No. 8. When all the decay is removed, the cavity is sterilized with either phenol or a solution of ammoniacal silver nitrate reduced with eugenol. If pulp capping is necessary, jodo formagen is inserted and then covered with a thin mix of Denco temporary cement (in the U.S.A.—Ames). All teeth with putrescent pulps as well as all infected roots are removed and space maintainers constructed. Frequently I have noticed that when a child's infected tonsils have been removed the parents were at a loss to know why the child still had a temperature and no desire to eat. On examining such a child, one very often finds infected teeth being left in to hold the space. In the first place, they do not hold the space and in the second, such poor technique surely does not do much for us in the way of gaining respect from our medical confreres. However I am not putting all the onus on the dentist in such cases for quite often I have had physicians remove infected tonsils but ignore infected teeth.

Cavity Preparation

Fig. 2 shows the various steps in cavity preparation. Fig. 3 shows radiograms of amalgam fillings in deciduous cuspid and first deciduous molar. In Fig. 2, the cuspid preparation recommended by Charles Sweet[2] is a most satisfactory preparation for an amalgam restoration in a cuspid. A restoration as seen in Fig. 4 illustrates how easily an overhanging filling could produce a malocclusion in this segment of the jaw. It also illustrates how necessary it is in some cases to slice the mesial of the second deciduous molar to allow the first bicuspid and cuspid to erupt normally. If the second deciduous molar in this case were removed in preference to slicing, in all probability the second molar would erupt before the second bicuspid thus pushing the six year molar forward and crowding the second bicuspid.

Loss of Deciduous Teeth

It will be noticed that in Dr. Willett's survey, 29% of the children had prematurely lost the deciduous teeth, the total number being 893. I can readily see how such would be the case. For several years I have made a survey in two school sections consisting of homes of middle and higher bracket incomes. One of these schools had 1,595 children and the other, some 1,250 children. The premature loss among these children corresponds fairly closely to that found by Dr. Willett. In one school, three space maintainers had been constructed and the other had a total of six.

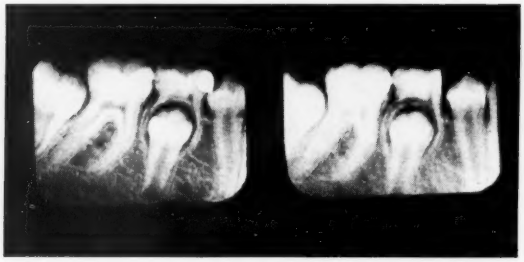

Fig. 4

This, and other observations I have made in talking to parents, lead me to believe that our Dental Public Health committees have educated the public to a point well in advance of our own thinking in this field. Drain and Cheyne[3] did considerable work on the premature loss of deciduous teeth and their report is as follows:

Of 396 patients in the 4 year old age group, 45 or 11% had extractions. For these 45 children, 81 teeth were extracted of which 57 or 70% *were deciduous molars.* Of these 57 molars, 20 or *35% were lower second deciduous molars.*

Of 693 patients in the 5 year age group, 139 or 20% had extractions. For these 139 patients, 292 teeth were extracted of which 241 or *85% were deciduous molars.* Of 241 deciduous molars, 64% or *26% were lower second deciduous molars.*

Of 878 patients in the 6 year group, 268 or 30% had extractions. For the 268 patients, 592 teeth were extracted of which 454 or *76% were deciduous molars.* Of these 454 deciduous molars, 181 or *39% were lower second deciduous molars.*

In the 7 year old group, 1,058 patients were examined of which 368 or 34% had extractions. For these 368 patients, 816 teeth had been extracted of which 512 or *62% were deciduous molars.* Of these 512 deciduous molars, 181 or *34% were lower second deciduous molars.*

Reference is also made to a survey[3] of 5,000 children carried out by Dr. Don C. Lyons of Jackson, Mich. It was found that in children between the ages of 5 and 12 years where malocclusion was noticed, 65% was associated with early loss or premature extraction of deciduous teeth with no attempt made to retain the space.

One can readily see from the above that more emphasis needs to be placed on this phase of our work. Speaking of premature loss of deciduous teeth, Dean A.D.A. Mason, of the Faculty of Dentistry, University of Toronto, has made this statement. "The retention of the second deciduous molar is one of the most important factors in the influence of the development of normal occlusion." I thoroughly agree with this statement. For many years dentistry has had a theme song, "save the six year molar." This motto has served a purpose in the past but I am sure that after reading Drain and Cheyne's report you will agree with me that it is time that we got a new motto, yes, indeed, one that will awaken the dentist to his responsibility with respect to the child of three years. It is my firm belief that, if we were to stimulate every dentist in America to take a keen interest in three year old children, few six year molars would be lost. I feel that our education to the public should still draw attention to the value of the six year molar but by over-emphasizing its care do we not tend to create in the minds of the laity the assumption that dental care for a child begins at six years? I don't feel that we should make comparisons of the value of different teeth but if we must, then it is my opinion that there are just as many or more mouths wrecked from the loss of the second deciduous molar as from that of the six year molar.

Space Maintainers

Many theories have been laid down as to where and when to apply space maintainers. This is a problem that presents a great opening for dental research, and indeed one that might serve humanity well. Joseph T. Cohen, Lewis, and others are to be commended for their work in this matter. Cohen[4] points out that the six year molar can drift 1 mm. mesially in the upper and 2 mm. in the lower arch without causing malocclusion.

The first questions in relation to space maintainers that one must face are where and when should they be constructed and of what type? The answers to these must be determined by considering the following questions:

1. What deciduous tooth is lost and when?
2. What relationship exists between the eruption of the second bicuspid and that of the second permanent molar?
3. When should deciduous molars be extracted if still in position at normal time of exfoliation?
4. If a deciduous tooth is to be used as an abutment for the maintainer, what does a

radiogram reveal with respect to the time this tooth itself might be exfoliated?

5. If a deciduous molar is lost at an early age when is the permanent tooth expected to erupt?

6. Should the maintainer be of a free end type to allow for lâteral growth?

7. Is an occlusal functional maintainer necessary?

Let us first turn our attention to the first factor,—what deciduous tooth is lost and when?

a) If a second deciduous molar is lost, I personally would always construct a maintainer up to the age of 10½ years. If lost at this age, I would take an x-ray and if it is found that the second permanent molar was contacting the six year molar and more advanced in the process of eruption than the second bicuspid, I would construct a maintainer. If the reverse was found to be true, then the case could be kept under observation until the second bicuspid erupts.

b) If the first deciduous molar is lost before the eruption of the permanent lateral incisor and the six year molar, a space maintainer should be constructed. If the six year molar is in position but the permanent lateral still not erupted, a space maintainer should be constructed. If both the six year molar and the permanent lateral incisor are both in position and the first deciduous molar lost, then a space maintainer is not necessary. However in any case where a space maintainer is not constructed, the space should be kept under observation.

c) Inasmuch as the upper permanent incisors are larger than the deciduous and the jaw must develop laterally to accommodate them, then it should necessarily follow that a space maintainer is not necessary. If through accident deciduous anteriors are driven up into the maxilla, advise that the area be kept clean and that the tooth will re-erupt as in Fig. 5. However they will have to be kept under observation and if the pulp becomes putrescent, they will have to be extracted.

d) Most writers evade the issue of the early loss of the lower deciduous incisors probably because accidents to the lowers are rare. I have searched the literature and found little or nothing on the matter. So far all I can report is that I have taken numerous casts and am observing what takes place. Several orthodontists with whom I have discussed the matter seem to feel that a maintainer is necessary. McBride[5] says the lower arch (anterior) is a different problem not being a definite part of the skull. Severe contraction may occur and a space maintainer is necessary. Baker[6] says if the mandibular deciduous incisors are lost prematurely the mandibular arch will not grow sufficiently in width to provide space for the permanent incisors. This condition usually induces a narrowness of the maxillary arch with crowding of the teeth and excessive overbite. For some time I was rather reticent about agreeing with the above statements but of late I have become firmly convinced that a space maintainer in most instances is necessary to replace the mandibular incisors when lost prematurely.

Jan. '43 Feb. '43 Oct. '43

Fig. 5

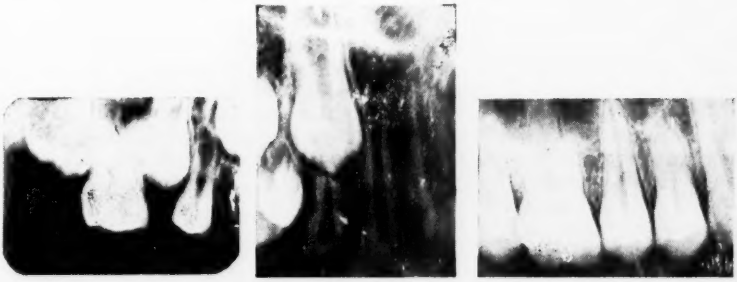

Fig. 7

If a space maintainer is constructed it should be a type that will allow development of the arch yet prohibit any collapse of the anterior segment of the jaw.

The second factor that confronts us in making a diagnosis in relation to when and where to construct a maintainer is that of the process of eruption, that is to say before attempting treatment, a study of the relationship that exists between the advancement of eruption of the teeth in that area should be made. In my earlier years of practice, a child, Donald D. came to the office with two upper six year molars drifted mesially to the point that they were almost in contact with the distal of the first deciduous molar. I very definitely informed the mother that these teeth could never erupt normally and referred her to an orthodontist. The orthodontist of very good standing agreed with me and gave her an estimate. I did not see the patient for over a year. When the child came to the office, I found the occlusion quite normal and the impacted bicuspids in their normal position. I was obliged to telephone the mother about another matter and I remarked on what a lovely result the orthodontist had secured. Needless to say my face was red when I was informed that they were still attempting to save sufficient funds to undertake the work. Fig. 7 illustrates the condition on first and second visit respectively.

On examining the radiograms I came to the conclusion that the permanent cuspid and first bicuspid would occupy all the available space in the anterior segment of the jaw and therefore the second bicuspid must have opened up the space by pushing the six year molar distally. However the question at this time that came to my mind was—if the second permanent molar had been further advanced in the process of eruption than the second bicuspid, would the space have been opened up as was evident in this case? This experience made me realize that this observation was an important one and my interest in the matter led me to look for further evidence. Later, I observed that a little girl, Lois

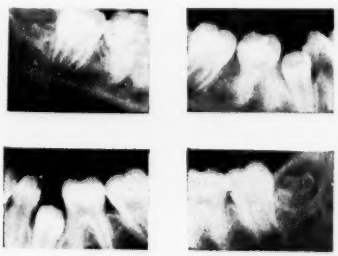

Fig. 8

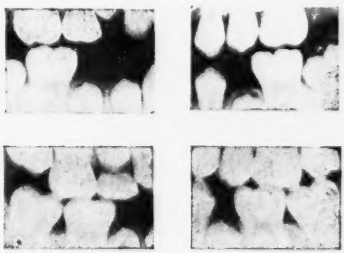

Fig. 9

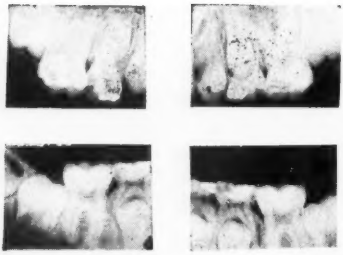

Fig. 10

H., who had been in my practice since three years of age and who had lost her deciduous molars normally at eleven years of age had two impacted bicuspids as in Fig. 8. It is my belief that the second molars, erupting too early, had closed the space.

Fig. 9 shows a case history of x-rays taken in October, 1940, and again in November 1941. In this case the chronological age alone was used as a guide to determine whether or not a space maintainer was necessary. No space maintainer was constructed and as a result the second bicuspid on one side became impacted.

When one sees what can happen to the alignment of teeth during the process of eruption does it not seem reasonable then to conclude that before making a diagnostic report to the patient, x-rays should be taken and a study of relationship that exists between the physiological and chronological aspects of the case?

Let us as a further example take the case of Jimmie G., a boy of 12½ years of age.

On Fig. 10 it will be noticed that his deciduous roots are still quite long and clinically speaking the teeth were quite firm. It will be noted that several large carious lesions are present. If we were to think of Jimmie's chronological age alone, we would be tempted to remove the deciduous molars thus saving the parents the money and the child the discomfort of having treatment. However, in view of the observations just discussed, it will be wise to retain these teeth for some time yet. It will be noted that the second molars, particularly in the lower, will probably erupt well in advance of the second bicuspid. My clinical observations over a number of years leads me to believe that in this case the second bicuspids are liable to become impacted if the deciduous molars are removed even at 12½ years. In this case I would retain the deciduous teeth until the second molars are completely erupted. In many cases however the deciduous teeth are retained too long in the mouth as in Fig. 11 (15 year old

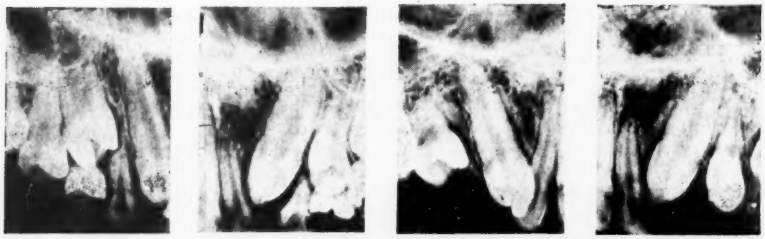

Fig. 11

November, 1940 Fig. 12 February, 1943

patient) and the damage to alignment of teeth is equally as great.

Another factor that confronts us in relation to space maintainers is one in which the second bicuspid is congenitally absent. It is my opinion that if this condition were detected through x-ray at five or five and a half years of age and the second deciduous molar extracted, the six year molar would move forward and a reasonably good occlusion would be obtained. Higley[7] states that if such a procedure were carried out, bridges and artificial restorations might be avoided at a later date. Fig. 12 illustrates such. X-rays were first taken in Nov. 1940 and again in 1943. According to previous history the second deciduous molar was extracted sometime previous to 1940.

Another problem to be considered before constructing a space maintainer is where the first deciduous molar is being used, as an abutment, is there a possibility of early exfoliation of that tooth? Once or twice I have constructed a space maintainer on a first deciduous molar at 7½ or 8 years of age only to find that the molar was soon lost. When this happens, one is liable to forget about a space maintainer and hope for the best. However, as mentioned above, too often the second permanent molar erupting force comes into play and the result is an impacted bicuspid. The result will be a disappointed parent—particularly after paying for a maintainer. To avoid this out-come, study the x-ray and try to determine the time of exfoliation of the first deciduous molar. One should also study its prognosis from the standpoint of pulp. Having had many such failures in my practice, I felt it was time that some new type of maintainer be devised that could cope with such a situation. I designed a new type of space maintainer called the intermaxillary occlusal extension space maintainer. Fig 13.

Fig. 13

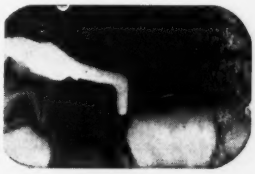

Fig. 14

In Tanya L., nine years, the upper cuspid and first deciduous molar were being lost and the second deciduous molar had been lost. the x-ray showed that the second molar was liable to erupt before the second bicuspid thus a space maintainer was thought necessary. A Willett overlay was constructed on the lower second deciduous molar and a projection 1½ to 2 mm. was extended parallel with the distal surface of the lower deciduous molar and to a point where it contacted the mesial of the upper six year molar.

Such a maintainer merely acts in a similar manner to that of an exfoliated second deciduous molar. If such a maintainer is inserted before the upper six year molar has erupted, I extend the projection to touch the upper gum at a point parallel with the distal surface of the lower second deciduous molar. As the six year molar erupts grind off the projection and when the six year molar is fully erupted it need not be higher than 1½ mm. When a maintainer of this type is constructed on the upper, to keep the lower six year molar in position, care must be taken to make the projection just long enough to avoid interference with the occlusal surface of the six year molar when the lower jaw is in protrusion. I have a number of these in mouths and so far they have been satisfactory. Several factors, however, which may possibly spell failure are being observed.

When the lower second deciduous molar is lost I construct a Willet space maintainer as in Fig. 14.

The arm at right angles is extended along the distal wall of the distal socket of the extracted tooth. If the second deciduous molar has been extracted some time previously, I determine the point at which the right angle

arm should be placed by measuring the other side of the mouth or by locating a point on the lower jaw parallel with the distal surface of the upper second deciduous molar. At this point I relieve my model slightly and construct a short arm. One must keep in mind that very seldom would the six year molar have drifted more than ½ mm., before erupting and that therefore a long arm may not be necessary.

Another very important question in relation to space maintenance is, when is the permanent tooth, following the extraction of the deciduous tooth, going to erupt? Very often, due to a large infected area around the deciduous molar which has been extracted, the bicuspid will erupt early. In such cases it is wise to wait for a few weeks before constructing a space maintainer. Fig. 15 shows a second bicuspid which erupted at 6½ years of age and only three weeks after the extraction. More than once I have made a poor diagnosis in this respect and when the maintainer was ready, as in this case, and the child brought in to insert it, the tooth was already erupted.

Most writers recommend a functional space maintainer. My observations both in practice and clinic lead me to believe that seldom do we find the deciduous teeth exfoliating to any great extent except in cases of multiple extraction. Many prominent writers, such as Brauer[8] and Willett[1] favour a functional space maintainer. Some authors definitely say that more attention should be given to the extrusion of deciduous teeth. However, to date I have not been able to find anything in the literature I have so far examined as to the damage done to the occlusion of the secondary dentition. In cases where either all the mandibular or maxillary deciduous molars are lost prematurely, I construct a prosthetic appliance.

Thumb Sucking

Habits also play an influencing role in the establishment of malocclusion. Much has been written about thumb-sucking and numerous psychologists have told us a great deal about how and when to treat it. Some even go so far as to say it does not cause malocclusion. Very few dentists will agree with this school of thought. When an appliance is placed in the mouth which helps the patient unconsciously to break the habit, it is not advisable to let him know why it is put there and the parents are advised to act accordingly.

Dr. J. B. Higley,[7] Iowa, says, "Since a habit is an unconscious mental pattern, it seems only reasonable that the use of a corrective device that will recall the act to the conscious mind and will upset the pattern by making the act impossible or ineffective, should be a more logical procedure than an appeal to ego or pride." I thoroughly agree with this statement. It is generally agreed that if the habit of thumb-sucking can be stopped before five years of age, orthodontia is not so apt to be necessary.

An appliance can be constructed by putting cast crowns on cuspids or first deciduous

Fig. 15

molars or both and a 0.045 wire is soldered across the palate clearing it at the mid line by 3/16 of an inch. If this does not prove successful three or four sharp pointed 2 or 3 mm. projections can be soldered to the wire and placed in a position pointing anteriorally so that they won't hurt the tongue but will the finger. The appliance is left on for several weeks and if the habit is not decreasing or if an auxiliary habit is being formed, then it would be wise to discontinue the treatment.

Probably the best treatment for thumb sucking should be to concentrate on breaking the habit at an early age. This might be accomplished through the aid of thumb guards, aluminum mits, splints, etc. If we succeed in stopping the habit we should not carelessly state to the parent that by doing this we are practising preventive orthodontia. We may be intercepting malocclusion in this segment of the jaw but it does not necessarily follow that orthodontia is not needed. It might be wise to delete the term preventive orthodontia from our literature.

Technique for Willett Space Maintainer

The technique for constructing a space maintainer of the Willet type is as follows. With a safe sided steel disk (protected by a guard) remove a slice from the mesial and distal of the tooth to be crowned. The buccal, lingual, and occlusal grooves are deepened with a No. 48 carborundum stone. Using the same instrument the marginal ridges are cut down sufficiently to allow for at least ½ mm. of material in this area of the crown. A diamond pencil stone or a No. 48 carborundum stone is used to remove the undercuts from the labial and lingual surfaces. A copper band is fitted to the tooth cut down so that it extends about 2 mm. beyond the occlusal surfaces of the tooth when forced down to the gingival. The tooth is lubricated and a low fusing compound is melted into the band and when placed on the tooth is forced well below the gingiva. The impression is well cooled and the plaster impression then taken in a crown and bridge tray. When the plaster impression is removed the compound impression of the tooth is packed with silver alloy and for retention purposes a small wire loop is left projecting out of it. The plaster impression is painted with a separating fluid and a stone model is poured. With this technique we have a very good amalgam model upon which to work in the construction of the crown. 32 gauge pink wax is used to cover the tooth and the wax is removed from the cusps but left in the grooves mentioned in the preparation. The 32 gauge wax is then covered to the desired thickness for casting with a harder inlay wax. A 14 gauge wax extension wire with a 3 mm. right angle arm is placed between the crown and the tooth approximating the space. In the case of the cuspid region, this right angle arm contacting its distal surface allows for the movement of the cuspid when lateral development takes place.

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3032A Yonge Street.

Editor's Note:

Miss Edmund, Librarian of the School of Dentistry, University of Detroit, makes her debut to Journal readers with this review of Walter McBride's new book. She has promised us more reviews in the future, and if there is any particular book you're interested in, write to her at the above address, she'll be glad to hear from you.

A.E.S.

Juvenile Dentistry by Walter C. McBride, D.D.S., F.A.C.D., Associate Professor of Operative Dentistry, Director of the Department of Pedodontics, School of Dentistry, Universitiy of Detroit; Visiting Lecturer Children's Dentistry, Postgraduate Division School of Dentistry, University of Michigan; Editor, Journal of Michigan State Dental Society. 359 pages. 298 engravings. Philadelphia, Lea and Febiger, 1945. Price $6.00.

The need for literature on dentistry for children cannot be overemphasized at the present time when alert individuals are aware that the strength of a nation can only be measured by the health and growth of her young. This realization and the dawning knowledge that there are fundamental principles involved in the treatment of the child patient as compared to the adult, afford reasonable explanation for the demand for an adequate text on children's dentistry.

In October the fourth edition of Walter C. McBride's *Juvenile Dentistry* came off the press. For many, the volume and the author, need no new introduction.

The book, covering practically every phase of dental care for children, has grown in perspective and detail but has lost none of the conciseness of the first, slim, red edition published in 1932. It is not a work given over to theoretics and speculation. Dr. McBride handles his subject witih a practical assurance and common sense far removed from dogmatism, but related basically with his own more than twenty years of specializing in dentistry for children.

There are four factors, he believes, which up to the present have made dental work for children unpopular: "(1) child behavior; (2) loss of fillings; (3) devitalization and abscesses following in the wake of restorations; and (4) unsatisfactory remuneration."

Through the author's analysis, these problems are simplified. The management of the normal, incorrigible and abnormal child and his behavior patterns are discussed with frankness. Radiographs and charts facilitate the answering of questions often associated with growth and development of the mixed dentition. Care has been taken to deal thoroughly with the subjects of diagnosis, oral hygiene, and operative procedures for primary and young permanent teeth, giving in detail, techniques, outlines and materials used for the care of simple cavities, pulp involvements, tooth fractures. Remedial measures are indicated for malocclusion and an understanding of its etiology advised, which may prevent many a heartache for an adolescent.

Dentistry for children is the ideal practice builder and retainer according to the writer. The economic difficulties associated with children's work can be overcome by efficient and practical office management. In his treatment of the "business side of juvenile dentistry," Dr. McBride recommends an hourly fee plan, or a contract system, both of which have worked out profitably to his knowledge.

Special chapters have been contributed by C. Taylor Hall, D.D.S., F.A.C.D. on *Root Resection;* by Harold V. Dwyer, B.S., M.D., F.A.C.P. on *Physical Diagnosis*: and by James Nuckolls, D.D.S., F.A.C.D. on *The Morphology of the Deciduous Molars with Special Reference to the Pulp Cavity and its Relation to Cavity Preparation.* These treatises are valuable assets in the sequence and unity of the book as a whole.

Juvenile Dentistry is the type of volume that every ambitious, conscientious dentist wants for reference in his own practice. It is a finely-styled, well-written textbook, denoting careful planning and professional balance. Frequent illustrations add to its interest and clarify technical passages. This reviewer recommends it not only for students and practitioners but also for nurses, public health workers and physicians, as an interesting text on child health problems as viewed from the dental standpoint.

Mary Edmund, A. B.

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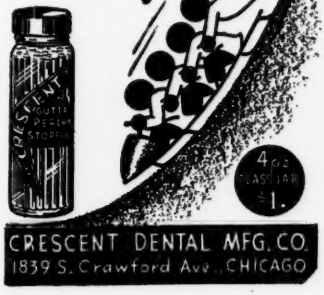

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Formula for the Future

A mother presented a five-year-old boy to the Chief of the Examination and Diagnostic Section in a School of Dentistry for examination, for comment, and for guidance. The instructor proceeded to examine the boy's teeth with a mouth mirror and an explorer, and finally he made this comment to the mother, "John has six cavities which will require filling." The instructor was most pleasant in his conversation with the parent, as well as with the child, and he assigned the young patient to a dental student in a very courteous manner. The student completed the restorations in several appointments, and the parent left the school after the last visit with a sense of pride as well as a sense of security—a false sense of security. The dental student graduated in due time, and he proceeded to follow the plan of practice for children which he, unfortunately, had been taught. Thousands of dentists have been indoctrinated with such an approach to an examination as well as a diagnosis, and it is one of the fundamental reasons why so few practitioners give a complete dental service to the child, and why so few practitioners find it economically interesting.

The instructor referred to in the preceding paragraph, did not inform the mother that her son's occlusion was, or was not, acceptable for that age level; that there was, or was not, sufficient width in the dental arches; that her son's teeth were, or were not, of an average size according to accepted standards of measurement; that her son was, or was not, brushing his teeth adequately or correctly; that additional cavities were, or were not, evident in the roentgenograms; that all of the permanent teeth, according to the roentgenograms, were, or were not, present and that each was, or was not, developing according to an average pattern; that her son was, or was not, within the range of average for the eruption of teeth; that her son had more, or a lesser number, of carious areas than the average child; and that there was, or was not, an opportunity to reduce the caries incidence in future months. These, and other points of major interest to the parent and child, were not discussed.

The instructor, or the dentist, who limits his examination to the mouth mirror and explorer, and who attempts a diognasis or who presents a treamtnet plan without all available evidence from other diagnostic media, is guessing. He is not fair to the child, the parent, the student or the profession. He is taking an unnecessary gamble with the child's future and with the student's future. He is selling the school and the profession short, and in many instances he is doing more harm than good to the children of that community.

an Editorial

The dental school has a dual responsibility, namely to the patient and to the student. The examination criteria and the standards of service demanded in a dental school will be reflected in the graduates of tomorrow. Fortunately, few dental schools now operate on the "guessing and faith" method of examination and diagnosis.

It must be recognized that there are levels of the population whose income does not permit a complete dental service. However, there is that group of patients who can and will support financially every logical recommendation submitted by a dentist. Such a group will be found in every community regardless of its size, and, therefore, every general practitioner is obligated to know, to recognize, and to have available a complete dental service for the child in every community. The dental schools, therefore, are obligated to teach the students in all of the fundamentals of pedodontics, so that the students, our future practitioners, can and will give their respective communities the service which is essential.

In addition to the mouth mirror and explorer examination, a full mouth and bite-wing roentgenographic series is essential for every new child patient. It is the exceptional child that does not require plaster casts for the determination of arch and tooth size as well as for future comparisons in the study of growth and development. Caries susceptibility tests and bacteriological examinations also are indicated for many children. The dentist, to be of maximum service to his child patients, must be keenly aware of gross variations in the formation, in the calcification, and in the eruption of the teeth. He, further, must be cognizant of changes and conditions tending toward malocclusions, and he must be a continuous student in the problems of growth as well as development.

The standards of diagnosis, of practice, and of operative procedure have been improved greatly since the inception of the American Society of Dentistry for Children. This Society and its members can claim rightfully the credit for many advancements in pedodontics, and one may well be proud to have been associated with this progressive movement. There remains, however, a tremendous backlog of work, of public opinion, of attitudes within the profession, and of research which requires the individual attention of every member of the American Society of Dentistry for Children. That the members of the Society will continue to think, to work, and to direct the way for a more complete service for the child, there is no doubt.

JOHN C. BRAUER

AROUND THE COUNTRY—

Assistant News Editors were scarce this issue. However, *Pennsylvania, Boston* and *New York* did come through as follows:

Pennsylvania—

October 15th—*Dr. Alton Novack,* Assistant Professor of Oral Surgery at the University of Pennsylvania, spoke on "Diseases of the mouth as related to Children's Dentistry."

November 19th—*Lt. Colonel Webb,* Director of the Mouth Hygiene Association, Philadelphia, presented a paper on "A Suggested Plan for Dental Care of School Children."

January 21st—*Dr. Edward Weiss,* Professor of Clinical Medicine at Temple University, spoke on, "Psychosomatic aspects in Dentistry for the Adolescent."

March 18th—*Dr. Linwood G. Grace,* Dental Division, Department of Public Health, Harrisburg, Pa., will speak on, "Public Health and its Relation to Dentistry for Children in Pennsylvania."

April 15th—*Mrs. Ruth A. Roworth,* Instructor of Nutrition and Dietetics at the Dental College of the University of Pennsylvania, will present a paper on "Nutrition and the Child."

How is that for a real active chapter? The news editor challenges any and all chapters to send in news to beat the Pennsylvania chapter.

And here is the list of new officers for this active unit—President, *Dr. Edward Ray Strayer;* Chairman Program Committee, *Dr. Elizabeth Kassab;* Secretary and Treasurer, *Dr. Gertrude Tank.* With a "Tank" to push them we can understand the Unit's activity!! (*Gertrude* is a *small* bundle of real push.)

From the New York Unit—

In 1939, under the leadership of *Dr. Aaron Apfel,* the Kings County Dental Society established a fund for a plaque to be awarded to the public school in Brooklyn that succeeded in attaining the highest percentage of dental correction for a five-year period. On November 1, 1945, this plaque was officially awarded to Public School 206 at Neck Road and East 23rd Street, with a register of 2300 pupils, 98% achieved dental correction. "It is our professional duty to perpetuate this live interest in oral hygiene. Concretely, we must continue this program among our youngsters at school," so states *Dr. Clarence B. Frankel,* now Chairman of the Oral Hygiene Committee.

For the November meeting, *Dr. Joseph Schure* and *Dr. Leonard Kohn,* orthodontists, presented the subject, "Mouth Rehabilitation —Orthodontics and Prosthetics." In conjunction, table clinics were presented by *Dr. M. B. Rubin* and *Dr. Paul Grindlinger.* They presented the construction of a cast inclined plane and the procedure in handling drifting molars prior to mouth rehabilitation.

From Michael Cohen of Boston—

The Massachusetts Unit of the American Society of Dentistry for Children held its second luncheon meeting on October 10, 1945 at the Du Barry Restaurant. Twenty members attended to hear *Dr. James H. Shaw,* instructor in Nutrition at the Harvard School of Dental Medicine, speak on "The Role of Sugar in the Etiology of Dental Caries." *Dr. Joseph Volker,* who discussed the remarks of *Dr. Shaw,* agreed that sugar was not the important factor in the etiology of dental caries, as has been suggested by many other investigators. Both men felt that other factors such as racial background, geographical location, frequency of eating and fermentable carbohydrates had equal or greater responsibility for the high caries susceptibility in this country.

On November 7 at another luncheon meeting of the Massachusetts Unit of the American Society of Dentistry for Children nineteen members attended. *Dr. Julius Levine,* visiting oral surgeon at the Beth Israel Hospital, spoke on the "Management of the Infected Deciduous Pulp."

Genial *Herschel Reynolds,* of the Michigan Unit, packed up his wife and 2 kids and hied himself to Albuquerque, New Mexico for the Christmas Holidays. *Herschel* is still connected witih the University of Detroit School of Dentistry besides carrying on his own practice of Orthodontics, but he doesn't seem to be losing any weight, much to his everlasting dismay!

Jay Shumaker, formerly of the Michigan Unit, is happy to be back in Detroit again after almost 3 years in the Navy. *Jim Gasaway* and *Ken Gibson* will have to improve their marksmanship with a deer rifle, for *Jay* says he spent many hours in the South Pacific waters shooting dolphin and an occasional shark!

Our Editor, *Al Seyler,* reports that at last he is beginning to feel that some efforts are not in vain, having received several nice letters from readers, among them *Walter McFall, John Brauer, Frank Tuma, Roy Brooks* and *Walter McBride.* Never mind *Al,* I appreciate you too, except when you take me out on one of those parties your friends have out there in *Grosse Pointe!*

Sam Stulberg of Detroit expects to be back in civilian practice shortly after the middle of 1946, and will again devote his talents to the practice of pedodontics exclusively.

W. H. Rumbel of West Virginia, had an excellent article on the treatment of fractured young permanent teeth in the October issue of the West Virginia Dental Journal.

Bragging just a bit, but very proud, your news editor has received his Scouters award. This represents several years of Boy Scout activity as a Scouter. At present the recipient is district chairman of the Valley Trails Council.

Just a tip to you men who should be interested in the youth of America: there is no greater opportunity to serve youth than to become actively interested in the Boy Scouts of America as an avocation, and dentistry for children as a vocation.

Dr. Harold Berk, assistant chief of clinics at the Forsyth Dental Infirmary for Children, recently read a paper on "Children's Dentistry" to the Waterbury Connecticut Dental Society. He also spoke on "The Psychological Approach to Childrens' Dentistry" to the Essex Country Dental Society.

Dr. R. Ronald Wyman, instructor in Clinical Dentistry, Tufts Dental School, presented a table clinic on "Operative Procedures" at the Forsyth Dental Infirmary for the annual meeting of the N. E. Dental Society.

Dr. R. R. Davenport, director of the Dental Health program in Walpole, presented a movie and a paper on "Dental Education in a School Health Program" to the members of the faculty and student body of the University of Vermont, Burlington, Vermont. State workers in Nutrition, Nursing, Home-Makers group, and members of the Department of Public Health also attended.

Dr. Paul K. Losch, assistant professor of clinical dentistry at the Harvard School of Dental Medicine, presented a paper before the Massachusetts State Federation of Women's Clubs on the "Socio-Economic Aspects of Public Service Dental Clinics." In the July issue of the American Journal of Orthodontics and Oral Surgery, he published a paper on "The use of Fibrin Foam with Thrombin in Dental Surgery."

Dr. H. A. Zander, assistant professor of clinical dentistry at Tufts Dental School, published in the June-August, 1945 edition of the Journal of Dental Research, an enlightening article entitled "Penetration of Silver Nitrate into Dentin."

This is good news for all of us. For some time there has been a real need for a brief, to the point, manual on Dentistry for Children, a manual that will assist more dentists to practice dentistry for children.

The Professional Relations Committee of the A.D.A. with the cooperation of the A.S.D.C. are now in the process of compiling this valuable manual. When completed it will be made available through state councils on dental health to all Association members.

Our own *"Jack" Wisan* heads the committee of the A.S.D.C. while *Lon Morrey* chairman's the A.D.A. group. Under the leadership of those two men we can expect an outstanding contribution to the promotion of dentistry for children.

Our Milwaukee mentor, *George Morgan,* of Marquette University, was the speaker at the regular meeting of the Chicago Dental Society on Friday, January 11, 1946, on the topic, "Practical Pedodontics."

From *Elsie Schildwachter* of Lynwood, California comes the following news item: "The 50th anniversary meeting of the Los Angeles County Dental Society was dedicated to *Dr. M. Evangeline Jordon* whose professional activities and interest in behalf of children have caused her to be known as the "'Pioneer in Children's Dentistry."

"*Dr. Jordon* was the honored guest at the noon day luncheon. There were 300 dentists in attendance. After presentation of *Dr. Jordon,* who made some very timely remarks on the subject of preventive dentistry, the president, *Dr. A. L. Everett,* presented her with a beautiful plaque in behalf of the Los Angeles County Dental Society.

"It was the first time that *Dr. Jordon* had appeared at a dental meeting in many years. She retired from practice in 1929. She has contributed much to the war effort in knitting afghans for local hospitals, having completed 18 of these blankets.

"I would suggest you publish her address: 5959 Franklin Ave., Hollywood 28, Calif. I am sure her old friends would like to drop her a note."

There's not much a fellow can add to the above, except to extend the congratulations of the entire Journal Staff and A.S.D.C. membership to Dr. Jordon, and to wish her many more years of happy living. A.E.S.

More from Michael Cohen of Boston—

"The Massachusetts Unit is happy to welcome two new members, *Dr. Finn Brudevold* and *Dr. R. F. Sognnaes.* The former was born in Norway, he was instructor in Clinical Dentistry at the University of Oslo in 1932. In 1940, he received his D.D.S. degree at the University of Minnesota. Later he received a Carnegie Fellowship at the Eastman Clinic at Rochester, New York, where he spent six months.

In June 1942, he was appointed instructor in oral pathology at Tufts Dental School. When his mother country was invaded, he enlisted in the Norwegian medical corps, serving with the Royal Norwegian Navy until cessation of hostilities. After this, he was transferred to the Norwegian Public Health Service in the United States. He has now returned to Tufts Dental School as instructor in Clinical Dentistry.

Dr. Sognnaes was born in Bergen, Norway in 1911 and was graduated from Norway Dental College, Oslo, in 1936. In 1937-38, he was a member of the expedition to Tristan da Cunha. He interned at the Forsyth Dental Infirmary, Boston, 1938-39. He was the recipient of a Carnegie Fellowship to the School of Medicine and Dentistry, Rochester, New York, where he received the degrees of M.S. and PhD. With the event of war, he enlisted in the Royal Norwegian Airforce in 1941 and served for the duration.

At the present time he is Assistant Professer of Dentistry at the Harvard School of Dental Medicine and has made many contributions to the dental literature.

We are pleased that these men have chosen Boston as their permanent residence where we hope they will find a haven for continued scientific study."

From the Zoller Dental Clinic at the University of Chicago to Western Reserve University College of Dentistry has gone *Philip Burwasser.* In that pedodontics-conscious community, *Dr. Burwasser* will be Instructor in the Department of Children's Dentistry.

J. Roy Blayney, Director of the Zoller Clinic, is in general supervision of a new study of the effects of fluorine on dental caries to be carried on in the city of Evanston, Illinois.

Roy Brooks, a member of the Michigan Unit, expects to be detached from the Navy in January, 1946, and to re-enter private practice shortly thereafter. Welcome back to your old neighborhood, *Roy.* We've missed you!

Speaking about the Michigan Unit, *Bill Quinlan* reports that Unit in a process of post-war re-awakening. There will be regular meetings and attractive programs scheduled for 1946, and our Editor will present a paper on the subject of "Fluorine" at the first meeting in January.

Claire Edmunds of Detroit and the Michigan Unit is now stationed in Korea. A recent letter from him indicates he expects to stay there several months longer. Hope it won't be so long, *Gus!*

Take a look at the program of the Cleveland Dental Society's Annual Children's Dental Health Day, elsewhere in this issue. The A.S.D.C. members and contributors to our Journal provide much of the material for this fine meeting.

E. Carl Miller of Cleveland was the guest speaker at the October meeting of the Hamilton, Ontario Dental Association. *Carl* is an active advocate of better dentistry for children, and his activities in the Cleveland Dental Society in behalf of pedodontics are legend. *Carl* approaches the problem of dentistry for children from the standpoint of a man in general practice who assumes his obligation to his child patients as conscientously as he does his operative dentistry and research in amalgam.

This department is conducted by Stan Brown. Please direct items of interest to him at Ithaca, Michigan.

Secretary's Message

As the new year is now started, your secretary must again remind the membership to promptly remit the dues for 1946. Members who are affiliated with state units will remit their national and state unit dues directly to the state unit secretary who will then forward the per capita dues to me as the secretary of the parent body. Please do this as promptly as possible to reduce to a minimum the posting of "second notices."

In accordance with the ruling of the Executive Council in 1941, those members who subsequently entered the dental corps of the armed forces have been carried gratis as inactive members and have been kept on our Journal mailing list with the Journal consequently having been sent to all theaters of war where our members have been assigned in their military capacities. This was possible only in those instances in which such members kept us posted as to their proper military addresses. Additional proposals of the Executive Council ruling was to the effect that this policy should continue through the term of military service or until the end of the war which ever occurred first after which time the individual would have to again resume the responsibility of paying the usual annual dues including therewith the subscription to the Journal. The state units are to be complimented in that all units carried their military members under the same ruling in regard to unit affiliation. With the end of the war finally having become a reality all members of military status will receive statements of dues for 1946, and unless paid within the customary time will be dropped as inactive members and stricken from the mailing list of the Journal.

This consideration has been greatly appreciated by those who have so benefited and the arrival of the Journal has been a joyful item of recollection of the professional life to which they hope to return and to which we welcome them. The dental care of children has taken a terrific "beating" in competition with the swollen fees available for adult services, and it will take the proper and proportionate time of all to re-establish the percentage of dentistry for children previously rendered before the United States was involved in the war.

To assist in this objective, let everybody renew their membership, get active in their state units, assist in establishing state units, get new members, and re-claim old members so that 1946 and our first national meeting since the war will be one long remembered.

R. M. Erwin, Jr.

The Child and the Dentist

JOSEPH T. HARTSOOK, B.A., D.D.S.

Editor's Note:

Joe Hartsook is one of those rare individuals, Buckeye born and raised, but who acknowledges the football supremacy of Michigan over Ohio State! Columbus-born, in 1915, with a B.A. from Ohio State in 1937, Joe received his D.D.S. from Michigan in 1942. After a summer with the Children's Fund of Michigan program, he returned to Ann Arbor as an Instructor in Clinical Dentistry, where he is now part-time assistant to Ken Easlick in the Children's Clinic. His private practice in Ann Arbor is about 75% pedodontics, and Joe may well be considered a successful young man.

There's a lot of good common sense in this article—I especially liked the remarks about the use of local anesthetics and the part about problem children, and I'm sure you'll agree that Doctor Hartsook is a "natural" for a Pedodontist. *A.E.S.*

There are no two children alike just as there are no two dentists alike.

Emotionally, a child's background is dependent upon too many different influences, hereditary and environmental, for him to behave just like his chum, or even his twin brother. It seems sensible, therefore, not to expect any one "rule-of-thumb" routine to manage every child patient so satisfactorily that both child and dentist get the most out of the visit.

Occasionally a child's visit to my office is terminated in an undesirable manner—not that his work has not been completed to the best of my ability, but because I have failed to win his confidence and respect. Some of these children come back to me because their parents make them return. However, I do not seem to be able to get close enough to them to obtain a fine, cooperative working arrangement.

Such children are misfits in my office. They have an appointment with me and they go through it. I prepare a cavity (for these children can be managed and often are tractable patients) and place a filling, complete a prophylaxis and demonstrate toothbrushing, but this appointment is strictly work and no fun. My inability to arouse enough interest in these patients to make them my friends, and my inability to make them enthusiastic about taking care of their teeth and becoming dentally fit constitutes a personal and professional failure.

Children enjoy learning new activities and most of them learn rapidly. True, they do not all like the same things, but there should be room in any child's behavior pattern to learn desirable health practices, regardless of his background of experience. Certainly, the "book-worm" can be impressed with the necessity for physical fitness if he wishes to cope with the tasks that lie ahead of him as he trains to take his place among the men whom he admires. The "tough-guy" knows already that ruggedness counts, that a man must be sound physically if he is going to be tough. Many little girls honestly want to grow up with a "Deanna Durbin" voice and smile.

Occasionally I fail properly to impress one of these young, hopeful patients. Perhaps time is the important factor; maybe it takes a much longer period for some children to become friendly than others. Perhaps, too, I shall learn in time a more direct approach to these reticent children. At the moment, however, a small group of children are an important problem in my office.

When a new, small, child patient comes to me I push dentistry into the background sufficiently long to make an estimate of his intellectual and social background. My assistant makes the first contact; she kneels

down and greets him by his first name or nick-name, whichever is used more often. She asks him how he has spent the day so far, and sometimes she never finds out. If she gets no response she tries an approach from a new direction; she suggests a trip through "our house." Often this trip is just enough to break down his reserve and get the initial appointment off to a good start.

My assistant never has worked in a dental office before, so we have been able to work out many technics of management from a fresh viewpoint. She learned early that one can lead a child to the dental chair but one can't make him sit. She "guides" the child patient into the operating room now and that innovation works better.

When I first see a child he already is in the dental chair. Usually I approach him with a masculine repetition of my assistant's opening remarks.

It is quite a tactical error to underestimate a child's intellectual or social background. Some of the smallest children are the most intelligent and some of the shyest are the most mature. A careful approach during the few opening minutes of the introductory appointment may permit one to get along gracefully for the remainder of one's professional association. A blunder, made at this time, may lose the child's respect completely, and should it happen, will destroy one's entire educational effort.

A child's respect must be gained to hold his interest, and his interest must be held in order to teach him.

To gain the respect of a child there is but one principle followed in my office—honesty. A vigorous effort always is made to impress upon him that in all of our relations I always shall be absolutely honest with him and expect him to be the same with me. I explain to him that we need a partnership arrangement to complete the work in the shortest time and in the most comfortable and profitable manner. The child is instructed to indicate if he is uncomfortable to the extent that he wants to stop the work momentarily but he also is expected to be as honest with me as I am with him and that any exaggeration of the amount of discomfort experienced by him will not be in keeping with our original agreement of complete mutual honesty. It is surprising how far some children will go to cooperate and to bear their share of the bargain under this type of working agreement. A child's respect must be gained to hold his interest, and his interest must be held in order to teach him.

With child patients very little anesthesia is used in my office to aid routine operative procedures. It has been my experience that when local anesthesia is used for all operative work, the patient becomes so dependent upon the complete freedom from pain which he enjoys during most operations that he is surprised and frightened when under certain conditions, he does experience some discomfort. He exaggerates the magnitude of the discomfort tremendously. I prefer my new child patients to experience the slight discomfort attendant with most routine cavity preparation and thus become dependent upon me, the dentist, rather than upon a drug to control the intensity and duration of this discomfort. These experiences, if properly managed, become the binding factors in the partnership bargains with my young patients. I never fail to make a sincere effort to let them know how much their help is appreciated during the operation, especially during the few moments in which pain is experienced.

As I become better acquainted with a child the procaine syringe, the sting and the reactions incident to the injection of a local anesthetic, are introduced. Anesthesia makes an interesting subject and I attempt to explain the effects of the anesthetic to him attractively. Once familiar with the anesthetic, more comfortable operating conditions are assured in our future associations when procaine is used.

In contrast to my first experience as a dentist for children, the behavior of the child that refuses dental treatment is no longer my biggest problem. I assume complete responsibility for these poorly-trained or frightened children, or I do nothing at all. Parents who are uncooperative and unwilling to let me handle these awkward situations alone and in my own manner are few, simply because

they have been exposed to this embarrassment many times before they brought the child to me.

As someone said, "there are no bad children, some are just better than others." In my office I assume that there are few behavior problems that cannot be managed without significant discomfort on my part or the patient's. It is just easier to become friendly with some than with others.

In a single sentence it may be said that my successes and my failures in the management of a child's dental appointment depend strictly upon my ability to build up a mutual interest and respect—a dental appointment camaraderie, an appointment rapport.

Sixth Annual Children's Dental Health Day

FEBRUARY 4, 1946 — HOTEL CARTER — CLEVELAND, OHIO

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THE CLEVELAND DENTAL SOCIETY

PROGRAM

8:45—Address of Welcome ..... Dr. L. E. Newman
President, Cleveland Dental Society

MORNING SESSION

9:00 A.M.—"I HAVE A SUCCESSFUL DENTAL PRACTICE"
Stanley C. Brown, D.D.S., Ithaca, Michigan

10:00 A.M.—"LOCAL ANESTHESIA FOR THE CHILD PATIENT"
W. Harry Archer, D.D.S., University of Pittsburgh

11:00 A.M.—"BACTERIOLOGY FOR THE CHILDREN'S DENTIST"
Mary C. Crowley, A.B., M.S.P.H., University of Michigan

12:00 LUNCHEON

1:15 P.M.—"PREVENTIVE DENTISTRY—YOUR RESPONSIBILITY AND OURS"
J. R. Blayney, D.D.S., Zoller Memorial Clinic, Chicago, Ill.

AFTERNOON SESSION

2:00 to 5:00 P.M.—LIMITED ATTENDANCE CLINICS
Stanley C. Brown—Economics
Mary E. Crowley—Bacteriology
W. H. Archer—Local Anesthesia
L. I. Grossman—Consideration of Vital Tissues of the Tooth
Philip Burwasser—Treatment of the Deciduous Pulp

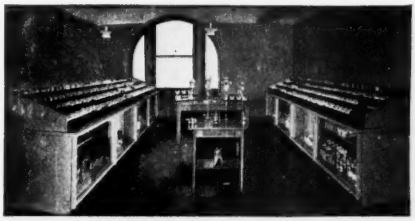
2:00 to 4:30—TABLE CLINICS

4:30 P.M.—"PSYCHOLOGY OF THE CHILD AS A DENTAL PATIENT"
Ernest F. Ritsert, D.D.S., Philadelphia, Pa.

6:00 P.M.—DINNER
Dr. H. C. Janke, Chairman

7:00 P.M.—"THE TOOTH — THE PULP — THE CHILD"
Lewis I. Grossman, D.D.S., D.M.D.

ALL DAY—EDUCATIONAL EXHIBITS



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Zinc Phosphate Cement

By PRATT RINGLAND, A.B., D.D.S.

Editor's Note:

Born in Oswego, N. Y., some 33 years ago, Pratt Ringland was educated at Yale and Northwestern Universities from which latter he received his dental degree in 1937. He was editor of the Dental Students' Magazine for a time, but Public Health work drew him to the Michigan School of Public Health where he obtained his M.P.H. At present, he is dental officer of Tennessee State Department of Health at Memphis.

A.E.S.

A survey of the literature reveals abundant controversy, repetition and indecision with respect to the dental cements. It is the intention of this paper, therefore, to review briefly the more dependable scientific contributions to the knowledge of zinc phosphate cement, and insofar as possible, for the benefit of the reader, to crystalize this knowledge into a workable scientific technic.

As in the case of the other dental cements, zinc phosphate cement continues to be abused by a large portion of dental practitioners. A review of its working qualities, physical properties and indications for use may give dentists a greater respect and appreciation for zinc phosphate cement and a desire to utilize this excellent material to better everyday advantage. A more detailed and studied application of the knowledge that is available already regarding zinc phosphate cement should do much to eliminate failures in its use.

The early history of dental cements is clouded in obscurity. Paffenbarger and Caul[1] give Pierce credit for developing this cement in 1879, whereas Ward and Peyton[2] state that Weston's insoluble cement, which was brought out about 1880, should be considered the first successful zinc phosphate cement to be used in America. After 1890 the acceptance of the dental cements by the dental profession was rapid. However, until Poetschke's[3] epochal work was published in 1815, much of the data concerning dental cements remained in the hands of the manufacturers, and the dental profession followed the makers' instructions blindly. From 1916 to the present time, however, various research investigators have accumulated scientific data carefully, so that today there is available accurate and workable knowledge of zinc phosphate cement.

The uses of this cement in dental practices are many and varied. Paffenbarger and Caul,[1] for example, estimate that dental cement is utilized, in some form, in 50 per cent of all dental restorations. It may be concluded that zinc phosphate cement accounts for much of this percentage, since, among its uses, one finds cementation of inlays, crowns, facings, bridge abutments, orthodontic appliances, temporary fillings and protective bases for thermal insulation. It has been assumed erroneously by some manufacturers, from time to time, that this material is suitable for fillings in the primary dentition, but certain of its properties preclude such an assumption.

The chemistry of zinc phosphate cement is interesting. It is to be noted that the cement comes to the operator as two ingredients, a powder and a liquid. When properly mixed, these ingredients form a combined material which sets or hardens. Basically, neither the powder nor the liquid has changed much in recent years. Refinement and adjustment of the ingredients rather than change in composition have provided improvements. Ward and Peyton[2] and others[3,4,5] state that the principal contents of the powder are zinc oxide and certain modifiers, such as magnesium oxide, bismuth trioxide, silicon dioxide, and other substances of lesser importance which increase crushing strength or serve as fillers. In preparing the powder both cal-

cination and particle size are important, as is pointed out by Peyton and Holmes.[4] Poor calcination and improper particle size may affect adversely the working properties of the powder, especially with respect to the film thickness of the resulting cement.

The composition of the liquid, used for zinc phosphate and other dental cements, likewise, has changed very little. Beginning with Poetschke's[3] investigations, most of the authorities agree on the ingredients. Orthophosphoric acid is the principal substance diluted with definite amounts of water. As buffers, small quantities of alumina and possibly zinc oxide are added.

Crowell,[5] who did an excellent piece of research work on the chemistry of zinc phosphate cement, states that the following reaction occurs when the powder and liquid are mixed:

From this reaction it is seen that when the basic powder is mixed with the acid liquid a chemical reaction takes place, with the resulting end product a new compound of definite and characteristic properties. Heat is liberated during the reaction and a crystalline hydrated salt results. This salt is detected microscopically by its long needlelike crystals.

The manipulation of zinc phosphate cement may be said to be one of the critical points in its treatment. Frequently practitioners are prone to lay the blame for cement failures on the material, but, as Volland[6] and his co-workers show, there is a tremendous variation among dentists in their mixing technics. It may be true that there is a wide difference in the physical properties of the commercial brands of cement. However, if instructions are followed carefully and if an exact mixing technic is followed, excellent results should be obtained with modern dental cements. The human element, ever present in manual technics, should be balanced by an accurate, scientific, unchanging method of procedure. Henschel[7] states, for example, that painful cementation may result from a poor mixing technic.

One factor in the mixing of zinc phosphate cement is the temperature of the slab at mixing time. Souder and Paffenbarger[8] conclude that the slab should be cooled to a temperature slightly above the dew point. This procedure delays the setting time and allows the operator to use the maximum amount of powder. Volland[6] and his experimenters find that an increase in the temperature of the mixing slab, decreases the time of setting. Henschel,[7] who agrees with Souder and Paffenbarger[8] says, "The best cementation is on the coldest mixing surface that does not sweat." In warm climates, particularly, care must be exercised to see that the temperature of the slab is correct.

Of extreme importance to the properties of cements is that the portions of the powder and the liquid be measured with accuracy. Relative success or failure of a mix in some instances may be decided by the powder-liquid ratio. Paffenbarger and Caul[1] show that when 0.95 grams of a given powder are mixed with 0.4 cc. of liquid, it takes six minutes for the cement to set at 37° C. A crushing strength of 13,000 pounds to the square inch may be produced. When 1.85 grams of powder are incorporated under the same conditions, the cement sets in 3.5 minutes and produces a crushing strength of 19,000 pounds to the square inch. Differences in setting time and crushing strength like these, due to a change in the powder-liquid ratio, have been observed and reported by other investigators.[3, 4, 5, 9] Volland[6] concludes that the optimum amount of powder is that amount which will make the heaviest usable mix for the operation at hand. Souder and Paffenbarger[8] state the same general rule for determining the powder-liquid ratio. Henschel[7] adds further information by noting that less powder is needed when the slab is warm than when it is cold. For a successful mix the meticulous operator will weigh and measure the exact amounts of powder and liquid for each particular mix.

The specific gravity of the cement liquid also can affect the mix. At all times the stopper of the bottle should be kept tight whenever the liquid is not in use. Evaporation and an increased specific gravity may decrease the crushing strength of the set cement, according to Peyton and Holmes[4]. Poetschke[3] reports similar observations.

The effect of spatulation on the resulting cement is another factor to be considered. It seems that both too little and too much spatulation are to be condemned. Peyton suggests a mix entailing one and one-half minutes for setting a crown or bridge. Crowell[5] says that by excessive spatulation the formation of a continuous solid mass is prevented. Interference with the formation of a continuous mass results in a weak and friable cement. An amount of spatulation for his technic.
increase in mixing time, beyond practical units, observes Volland,[6] increases the setting time. This procedure, indirectly, would mean more spatulation. Within reason, the role of spatulation falls in the bounds of common sense; and an operator should have little difficulty in deciding for himself the correct

Although it is true that zinc phosphate cement shrinks slightly on setting, it is to such a small degree that apparently little harm is done. Souder and Paffenbarger[8] have demonstrated this shrinkage conclusively and others[1,3,4,10] agree with their observation.

Certain manufacturers have made claims that their zinc cements are truly hydraulic, *i.e.*, will set under water. None of the cements investigated by the various research groups has been found to be hydraulic. Volland[6] brings out this point, and confirmation is found in the work of others[1,10]. It is unwise, therefore, to allow saliva or any other liquid to come into contact with the cement until it has set.

The rapidity of incorporation of the powder into the liquid assumes considerable importance in the mixing of cement. For one thing, this procedure should be done gradually rather than all at one time, preferably in about four portions. Several desirable effects will result from incorporation in this manner. Less heat will be retained in the cement mass; also, increasing the rate of incorporation of the powder into the liquid with a short time of spatulation decreases the setting time, says Volland[6]. Usually a more uniform mix likewise is obtained. The operator may vary his technic accordingly as he desires a thin or thick mix for the purpose that he has in mind.

The question of injury to the pulp of a tooth by zinc phosphate cement no longer seems to be a problem, for it is concluded generally that this cement actually protects the pulp. Crowell[5] says that zinc phosphate cements are self-neutralizing. This statement means that a pH very close to that of saliva is reached by the cement within several hours after insertion. Worner[10] also shows this observation to be true. Paffenbarger and Caul[1] likewise declare that this type of cement is not injurious in any manner. In addition to determining that the acidity of the cement is neutralized very quickly, these same authors state that the arsenic content of the present day zinc phosphate cements is too minute to cause harm, so arsenic should not be considered.

Below follows a summary of the detailed requirements of the American Dental Association specification number eight:

This table is presented to illustrate how excellent are the zinc phosphate cements that can meet the specification. Many cements which can qualify are available to the dental practitioner, and it is to his advantage to choose one of the brands which do. With such materials, and by the application of the principles outlined here, with careful attention to detail and technic, it is in the power of dentists to use zinc phosphate cements in their practices with far better effect that most have used them until the present time.

TABLE

Consistency of mix	Time of setting 37°C.		Ultimate compressive strength	Film thickness	Solubility and distintegration	Arsenic content
Disk 30± 1mm. in diameter	Min. 4 min.	Max. 10 min.	12,000 lbs. per sq. in. minimum	40 mic. max.	3% by weight	1-part in 500,000 .0002% by weight

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Ethyl Chloride as an Anesthetic Agent in Minor Dental Surgery for Children

R. M. Erwin, Jr., D.M.D.

Editor's Note:

Mott Erwin is no newcomer to our Journal, since his Secretary's Message usually graces our pages. Since the consolidation of the teaching institutions in Oregon, Mott has been Director of the Department of Pedodontics at the University of Oregon School of Dentistry, in addition to his flourishing private practice, and his duties as Secretary of the A.S.D.C. Quite a piscatorial enthusiast, much of his vacation time is spent roaming the beautiful, well-stocked streams of Oregon and Canada, and if you're ever in doubt as to which streams to fish, take your vacation near Portland and write to Mott for his suggestions!

A.E.S.

Ethyl chloride is the general anesthetic of choice at the Forsyth Dental Infirmary for Children in Boston for most cases of minor dental surgery of children within their 12th physiologic year of age and younger. This is true of cases requiring only short periods of anesthesia, nitrous oxide or nitrous oxide and ether being used for the more prolonged anesthesias. Dr. Max Jacobs who has been head of the department of anesthesia in Forsyth reported in the Journal of the A.D.A. September 1936, a 200,000 series of ethyl chloride cases most of whom were from the lower economic strata, and due to clinical routines were not given physical examinations to determine physical acceptancies of the cases for general anesthesia. Of these 200,000 cases there was not experienced a single fatality. The majority of these anesthetics was routinely administered by inexperienced student internes as current graduates from the

dental colleges of the United States and Canada and acquiring their proficiencies in the department.

Ethyl chloride is favorably referred to by the authors of the three leading pedodontic text books. "Juvenile Dentistry", by Dr. Walter McBride of Detroit, Michigan "Dentistry for Children," by Dr. John C. Brauer of Iowa City, Iowa, and "Practical Pedodontia," by Dr. Floyd E. Hogeboom of Los Angeles, California. These and other nationally recognized practicing pedodontists routinely use ethyl chloride as indicated in their opinions as an agent of analgesia.

In the interest of safe procedures in the hands of the inexperienced, certain principles and observations of principles were presented and emphasised at Forsyth which, when followed resulted in the 200,000 case report referred to earlier. Deviations from these rules may be taken, but in the hands of other than trained and experienced anesthetists an adherence thereto is recommended, and when followed will make minor dental surgery for children a seasonably simple procedure for the operator, child patient, and parent.

Greater liberty may be taken in regard to immediateness of the last ingestion of food. Usually the child may have its meal and present for an ethyl chloride anesthetic in an hour and a half. If the extraction is anticipated at the making of the appointment restriction of eating may be observed. Upon arrival the child is sent to the lavatory to evacuate the urinary bladder during which time the necessary equipment is made ready.

The equipment is simple and inexpensive, consisting of the following: an eight inch length of four inch gauze bandage which is folded to make a double thickness four inches by four inches, a rubber mouth prop of acceptable size with a string attached, a 100 gm glass tube of ethyl chloride with a "lift valve," and the necessary surgical instruments. During the absence of the child the instruments are placed within the fold of a sterile towel, and the length of gauze, rubber mouth prop, and tube of ethyl chloride placed on top.

It is best to explain to the parent that the depth of anesthesia sought is not that sought for major surgery but rather light "like a person in a drunken stupor," that they generally do not become nauseated, and that some times the child may wiggle or cry at the time of operation but that it is like "talking in their sleep," a reflex. Explanation here is acceptable, later it would be an alibi.

Place the child in the chair, adjust the back upright to the seat and then easily tip the chair back as far as it will go. This will assist in preventing the child from slipping down in the chair. Explain to the child that you're going to give him a nap long enough to snore about twice. Place the mouth prop with the explanation that it will keep him from biting his tongue while he is asleep. Standing at the right rear position of the chair with the child's head to your left side place the gauze bandage over the open mouth and hold in place with the left hand, the fingers being spread widely, that the little finger is under the chin, the next finger over the chin, the next finger over the upper lip, and the thumb and fore finger pressing the nostrils closed. At this stage the child is told to "blow" at which time the ethyl chloride is applied to the bandage. Explain that the ears may hum a little or that they may hear a ringing noise.

Some operators hold the ethyl chloride at arms length from the mouth and spray it on from a distance. The author has found it more desirable to hold the tube close to the mouth and open the valve to permit a "drop" application, applied at an interval of about a second apart. If the gauze frosts, no more is applied until cleared by the patient's breath. As symptoms of desired depth approach or if the child begins to move some the author places his right leg up over the top of the right arm of the chair, across the lap of the patient and the shin slipped under the fore arm of the left arm of the chair anchoring the instep under the elbow of the cuspidor as it comes from the unit. Restraining straps are not used as they would contribute to timidity. The assistant has then only to hold the left wrist of the patient. As the desired symptoms are attained the gauze is given another few quick drops and then lightly thrust into the mouth back of the field of operation NOT as a throat pack but rather as a throat screen. This also helps to continue the anesthetic a bit longer.